

spirit-lamp: after this, they acted very well on mixed oxygen and hydrogen. Others, which had been heated more powerfully by the blowpipe, acted afterwards on the gases, though not so powerfully as the former. Hence it appears that heat does not take away the power acquired by the platina at the positive pole of the pile: the occasional diminution of force seemed always referable to other causes than the mere heat. If, for instance, the plate had not been well washed from the acid, or if the flame used was carbonaceous, or was that of an alcohol lamp trimmed with spirit containing a little acid, or having a wick on which salt, or other extraneous matter, had been placed, then the power of the plate was quickly and greatly diminished

(37°, 372).

321. This remarkable property was conferred upon platina when it was made the positive pole in sulphuric acid of specific gravity 1.336, or when it was considerably weaker, or when stronger, even up to the strength of oil of vitriol. Strong and dilute nitric acid, dilute acetic acid, solutions of tartaric, citric, and oxalic acids, were used with equal success. When muriatic acid was used, the plates acquired the power of condensing the oxygen and hydrogen, but in a much inferior degree.

322. Plates which were made positive in solution of caustic potassa did not show any sensible action upon the mixed oxygen and hydrogen. Other plates made positive in solutions of carbonates of potassa and soda exhibited the action, but only in a feeble degree.

323. When a neutral solution of sulphate of soda, or of nitre, or of chlorate of potassa, or of phosphate of potassa, or acetate of potassa, or sulphate of copper, was used, the plates, rendered positive in them for four minutes, and then washed in water, acted very readily and powerfully on the mixed oxygen and hydrogen.

324. It became a very important point, in reference to the cause of this action of the platina, to determine whether the positive pole *only* could confer it (303), or whether, notwithstanding the numerous contrary cases, the negative pole might not have the power when such circumstances as could interfere with or prevent the action were avoided. Three plates were

therefore rendered negative, for four minutes in diluted sulphuric acid of specific gravity 1.336, washed in distilled water, and put into mixed oxygen and hydrogen. *All of them acted,* though not so strongly as they would have done if they had been rendered positive, Each combined about a cubical inch